Tecnología Informática

Marco Mendieta Parihuancollo

Manual del programador LATEX3

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MDT496 ESTUDIOS DEPARTAMENTO DE OBRAS LITERARIAS DESARROLLO DE APLICACIONES MULTIPLATAFORMA JAVA® — WEB — ANDROID — MATHCAD — MAPLETM — \LaTeX

Manual del programador \LaTeX 3

Especificación de los lenguajes Plain T_EX, LAT_EX 2 $_{\varepsilon}$ y LAT_EX3

Marco Mendieta Parihuancollo

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Manual del programador LATEX3, Especificación de los lenguajes Plain TEX, LATEX 2ε y LATEX 2ε

Marco Mendieta Parihuancollo Versión: 036MPAAAY044 (2024-12-17) Paquete: Tecnología Informática

Dedicatoria

Esfuerzo sereno triste pero siempre altivo por encontrar en la energía misma de la vida el camino para aceptar la muerte (Pablo Neruda).

Amado padre, hoy ausente, agradezco las muchas horas que estuviste a mi lado otorgando tu apoyo y protección. Al final, un silencio implacable, solo recuerdos que arañan el alma.

Este trabajo, producto de un gran esfuerzo, se lo dedico a mi amado padre Marcos E. Mendieta $C.(\dagger)$.

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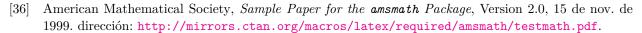
- [1] D. E. Knuth, Computers & Typesetting, The T_EXbook, inglés. Reading, Mass.: Addison-Wesley, 1984, vol. A, ISBN: 0-201-13447-0.
- [3] LATEX Project Team, LATEX News, Issues 1-40, inglés, 2024. dirección: https://www.latex-project.org/news/latex2e-news/ltnews.pdf (visitado 11-12-2024).
- [4] LATEX3 Project Team, LATEX3 News, Issues 1-12, inglés, 2023. dirección: https://latex3.github.io/news/latex3-news/l3news.pdf (visitado 23-06-2023).
- [5] C. Schenk, MiKTeX Manual, Revision 2.9.6360, inglés, 29 de oct. de 2017. dirección: file://texmf/doc/miktex/miktex.pdf.
- [6] Stack Overflow Documentation, LATEX, Notes for Professionals, inglés, 2018. dirección: https://goalkicker.com/LaTeXBook/LaTeXNotesForProfessionals.pdf (visitado 06-02-2023).
- [7] T_EX Users Group, A Directory Structure for T_EX Files, TDS version 1.1, inglés, 23 de jun. de 2004. dirección: https://linorg.usp.br/CTAN/tds/tds.pdf (visitado 07-07-2024).
- [8] J. Braams, D. Carlisle, A. Jeffrey, L. Lamport, F. Mittelbach, C. Rowley y R. Schöpf, *The LATEX2e Sources*, inglés, LATEX Project team, 15 de abr. de 2017.
- [9] F. Mittelbach, M. Goossens, J. Braams, D. Carlisle y C. Rowley, The LaTeX Companion, inglés, 2.ª ed. Boston, MA, USA: Addison-Wesley, 2004, ISBN: 0-201-36299-6.
- [10] LATEX Project Team, The LATEX 2_E for authors, inglés, 2020. dirección: https://www.latex-project.org/help/documentation/usrguide.pdf (visitado 11-03-2023).
- [11] L. M. Castro Souto, Introducción a la edición de documentos con ATEX, Manual del Curso, Universidade da coruña, 17 de nov. de 2004. dirección: http://www.geocities.ws/hurtcp/archivos/manual.pdf (visitado 24-07-2022).
- [12] R. De Castro Korgi, *El universo LATEX*, 2.ª ed. Departamento de Física, Facultad de Ciencias, Universidad Nacional de Colombia, 2003, ISBN: 958-701-060-4.
- [13] L. Lamport, F. Mittelbach y J. Braams, Standard Document Classes for Lambert Version 2e, inglés, Lamport Project team, 29 de sep. de 2014.
- [14] Unicode Consortium, The Unicode Standard Version 12.0, 2019, ISBN: 978-1-936213-22-1. dirección: https://www.unicode.org/versions/Unicode12.0.0/UnicodeStandard-12.0.pdf (visitado 15-06-2019).
- [15] A. Bellamy-Royds, B. Brinza, C. Lilley, D. Schulze, D. Storey y E. a. Willigers, "Scalable Vector Graphics (SVG) 2, W3C Candidate Recommendation 04 October 2018", inglés, World Wide Web Consortium (MIT, ERCIM, Keio, Beihang), Candidate Recommendation, 4 de oct. de 2018. dirección: https://www.w3.org/TR/2018/CR-SVG2-20181004/.

- [16] V. Eijkhout, TeX by Topic, A TeXnician's reference, inglés, Texas Advanced Computing Center, University of Texas, 2007. dirección: https://linorg.usp.br/CTAN/info/texbytopic/TeXbyTopic.pdf (visitado 01-06-2023).
- P. Olšák, "TFX in a Nutshell", inglés, The OpTFX manual, Czech Technical University in Prague, 3 de jun. de 2021, dirección: https://mirrors.tuna.tsinghua.edu.cn/ctan/info/tex-nutshell/texnutshell.pdf (visitado 28-09-2021).
- R. Seroul, S. Levy, S. Levy y D. Foata, A Beginner's Book of TeX. Springer Science & Business Media New York, 1991, pág. 284, ISBN: 9780387975627. DOI: 10.1007/978-1-4419-8654-2. dirección: https://books.google.com.bo/books?id=HJ7sumWcwX8C.
- T. Oetiker, H. Partl, I. Hyna v E. Schlegl, Introducción no tan corta a LATEX. 2014, Versión: 5.03 [19] Agosto 2014.
- J. Alaminos, M. Martín y J. Merí, Introducción a E^AT_EX, Departamento de Análisis Matemático, 2012. [20]
- A. Borbón A. y W. Mora Flores, Edición de Textos Científicos LATEX 2017, 2.ª ed. Escuela de Matemática, Instituto Tecnológico de Costa Rica, 2016, ISBN: 978-9977-66-227-5.
- S. Parkin, "The Comprehensive LATEX Symbol List", 5 de mayo de 2021. dirección: www.ctan.org/texarchive/info/symbols/comprehensive/symbols-a4.pdf (visitado 22-09-2021).
- L. A. Padrón Hernández, Cómo crear documentos científicos de calidad con herramientas de software libre, Breve introducción a LATEX, Gnuplot y Subversión. Servicio de Publicaciones y Difusión Científica, Universidad de las Palmas de Gran Canaria, 2011, ISBN: 978-84-15424-15-4. dirección: https://www. abebooks.com/servlet/BookDetailsPL?bi=30306726442 (visitado 24-07-2022).
- G. Grätzer, More Math Into LATEX, inglés, 4.ª ed. Springer Science+Business Media, LLC, 2007, ISBN: 978-0-387-32289-6.
- D. Pacios Izquierdo, BaSiX LATEX Básico con Ejercicios Resueltos. Independently published, 2018, [25]ISBN: 978-17-2898-979-2.
- [26] F. J. Martínez Calvo, Guías de la Comisión Braille Española, Signografía matemática. Madrid, España: Comisión Braille Española, 2007, ISBN: 978-84-484-0195-5.
- C. Feuersänger, "Notes on Programming in T_FX", inglés, 8 de mayo de 2021, dirección: http:// pgfplots.sourceforge.net/TeX-programming-notes.pdf (visitado 28-09-2021).
- M. Mendieta Parihuancollo, "Física Fundamental, Especificaciones de nomenclatura científica convencional de la física subyacente", MDT496 ESTUDIOS, Oruro, Bolivia, inf. téc., 2021.
- [29] G. Zanghirati, ATEX & friends course in Helsinki - a TEX/ATEX enthusiast's view, inglés, mayo de 2019.
- [30] \LaTeX Project Team, \oiint TeX for package and class authors – current version, inglés, 2023. dirección: http://mirrors.ctan.org/macros/latex/base/clsguide.pdf (visitado 20-02-2024).
- [31] LATEX3 Project Team, The LATEX3 Sources, inglés, 14 de jun. de 2018.
- F. Mittelbach y U. Fischer, The LATEX Companion, inglés, 3.ª ed. Addison-Wesley, 2023, ISBN: 978-0-13-816648-9. dirección: https://web.archive.org/web/20230623063856/https://latex3.github. io/news/2023/03/17/TLC3/ (visitado 23-06-2023).
- J. Braams, D. Carlisle, R. Fairbairns, M. Høgholm, B. Le Floch, T. Lotze, F. Mittelbach, W. Robertson, C. Rowley, R. Schöpf y J. Wright, The expl3 package and LATEX3 programming, inglés, LATEX3 Project Team, 14 de jun. de 2018. dirección: file://texmf/tex/latex/l3kernel/expl3.pdf.
- [34] X. Danaux y D. Gandy, The fontawesome package, Version 4.6.3.2, released on May 22, 2016, 2016.
- A. Phan, "Mathabx series, Information and tests", 18 de mayo de 2005. dirección: https://www.ctan. org/pkg/mathabx (visitado 22-09-2021).









- [37] R. Schöpf, B. Raichle y C. Rowley, A New Implementation of LATEX's verbatim and verbatim* Environments, 12 de mar. de 2001. dirección: http://mirror.ctan.org/macros/latex/required/tools/verbatim.pdf.
- [38] F. Mittelbach, *The* doc *and* shortvrb *Packages*, 15 de abr. de 2017. dirección: http://mirror.ctan.org/macros/latex/base/doc.dtx.
- [39] C. Heinz, B. Moses y J. Hoffmann, *The Listings Package*, inglés, ver. 1.8d, 24 de mar. de 2020. dirección: http://mirror.ctan.org/macros/latex/contrib/listings/listings.pdf.
- [40] T. F. Sturn, *The tcolorbox package*, *Manual for version 3.05*, inglés, Institut für Mathematik und Informatik, Universität der Bundeswehr München, 28 de mayo de 2014.
- [41] J. Wright, *The ieee bibliography style for biblatex*, 26 de feb. de 2020. dirección: https://www.ctan.org/pkg/biblatex-ieee.
- [42] H. Adriaens, The xkeyval package, v2.7a (2014/12/03), 2014.
- [43] T. 3. Project, *The* xparse *Package*, 12 de mar. de 2021. dirección: http://mirror.ctan.org/macros/latex/contrib/13packages/xparse.pdf.
- [44] K. K. Thorub, F. Jensen y C. Rowley, *The calc package Infix notation arithmetic in LaTeX*, inglés, oct. de 2014. dirección: http://mirror.ctan.org/macros/latex/required/tools/.
- [45] D. Carlisle, The file ltxdoc.dtx for use with \LaTeX 2 ε , 13 de mar. de 2017. dirección: http://mirror.ctan.org/macros/latex/base/ltxdoc.dtx.
- [46] R. Turner, The changelog Package, v2.5.1 (2024/09/17), inglés, 2024.
- [47] J. Wertenauer, The vhistory package, inglés, 30 de jul. de 2021.
- [48] R. Fielding, L. Masinter y T. Berners-Lee, "Uniform Resource Identifiers (URI), Generic Syntax", inglés, The Internet Engineering Task Force, Standards Track, ago. de 1998, ISRN: RFC 2396. DOI: 10.17487/RFC2396. dirección: https://www.rfc-editor.org/rfc/pdfrfc/rfc2396.txt.pdf (visitado 18-02-2024).
- [49] —, "Uniform Resource Identifier (URI), Generic Syntax", inglés, The Internet Engineering Task Force, Internet Standard, ene. de 2005, ISRN: RFC 3986. DOI: 10.17487/RFC3986. dirección: https://www.rfc-editor.org/rfc/rfc3986.html (visitado 18-02-2024).
- [50] M. Heldoorn, The SIunits package*, Consistent application of SI units, inglés, 2 de dic. de 2007. dirección: https://www.ctan.org/pkg/siunits (visitado 05-01-2024).
- [51] M. Mendieta Parihuancollo, HTML, Oruro, Bolivia: MDT496 ESTUDIOS, 2021.
- [52] —, Unicode, Una breve historia sobre codificación de caracteres. Oruro, Bolivia: MDT496 ES-TUDIOS, 2021. dirección: https://archive.org/details/mdt496-036MPAABD009P01 (visitado 07-03-2021).
- [53] V. Volovich, W. Lemberg y LATEX3 Project Team, Cyrillic languages support in LATEX, 1999. dirección: http://linorg.usp.br/CTAN/macros/latex/base/cyrguide.pdf (visitado 09-12-2020).
- [54] B. Longborough, *gitlog.sty*, A proof of concept for automatic typesetting of change logs from the git DVCS, inglés, nov. de 2015.
- [55] J. Schrod, The rcs Package, inglés, 2 de ago. de 1995.
- [56] A. D. Brucker, The suninfo package, Version 0.7.4, inglés, 23 de mar. de 2010.
- [57] J. Schmidt, tikz-palattice draw particle accelerator lattices with TikZ, v2.3 (March 9, 2017), inglés, 2017.

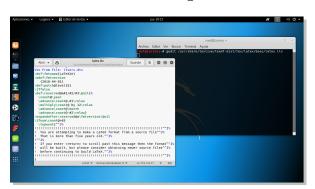
Apéndice A

MDT496 ARCHIVE

MDT710FEX —Survivor Library

Proyecto MDTzi@Fex, módulo Survivor Library (Figura A.1). Este módulo tiene el objetivo de consolidar la información de primera fuente, indexar la lista de referencias (citas no estándar del documento) a los archivos (documentos, códigos fuente, etc.) locales en ambos sistemas, Linux (TeX Live) y Windows (MiKTeX); siendo este último la principal fuente de datos.

Figura A.1. MDT496 ARCHIVE — Survivor Library



a). Código fuente



b). Documentos

System

- * TeX Live (Manual|readme)
- + /usr/share/texlive/index.html
- * /usr/share/texlive/readme-html.dir/readme.es.html
- * /usr/share/texlive/readme-txt.dir/README.ES
- * TeX Live Manager (Settings|Package|Update)
- + # tlmgr --help
- * MiKTeX (Manual|FAQ)
- * C:\Program Files\MiKTeX 2.9\doc\miktex\miktex.pdf
- * C:\Program Files\MiKTeX 2.9\doc\miktex\miktex.chm

cite: Schenk2017

- C:\Program Files\MiKTeX 2.9\doc\miktex\manual\index.html
- C:\Program Files\MiKTeX 2.9\doc\miktex\faq.chm

- MiKTeX Settings
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\mo.exe
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\mo_admin.exe (Admin)
- MiKTeX Package Manager
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\mpm_mfc.exe
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\mpm_mfc_admin.exe (Admin)
- MiKTeX Update
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\internal\copystart.exe
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\internal\copystart_admin.exe (Admin)
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\internal\miktex-update.exe
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\internal\miktex-update_admin.exe (Admin)
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\internal\uninstall.exe
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\internal\uninstall_admin.exe (Admin)
- DVI Previewer (Yap) | TeXworks
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\yap.exe
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\miktex-texworks.exe
- MiKTeX Engines
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\latex.exe
- C:\Program Files\MiKTeX 2.9\miktex\bin\x64\pdflatex.exe
 - C:\Program Files\MiKTeX 2.9\miktex\bin\x64\etex.exe

ETFX

- LaTeX2e Release Newsletters
- https://www.latex-project.org/news/latex2e-news/ (visitado 2024-12-11)
- https://www.latex-project.org/news/latex2e-news/ltnews.pdf cite: LaTeX2024 cite: LaTeX2022
- https://www.latex-project.org
- * /usr/share/texlive/texmf-dist/tex/plain/base/plain.tex
 - C:\Program Files\MiKTeX 2.9\tex\plain\base\plain.tex
 - C:\Program Files\MiKTeX 2.9\tex\plain\base\letter.tex
 - fontchart.tex, gkpmac.tex, list.tex, llist.tex,
 - picmac.tex, wlist.tex mptmac.tex,
- /usr/share/texlive/texmf-dist/tex/latex/base/
- C:\Program Files\MiKTeX 2.9\tex\latex\base\preload.ltx (From File: preload.dtx)
 - 2014/09/29 v2.1g LaTeX Kernel (Font Preloading)
- C:\Program Files\MiKTeX 2.9\tex\latex\base\fonttext.ltx (From File: fontdef.dtx)
- 2016/12/03 v3.0a LaTeX Kernel (Text font setup)
- C:\Program Files\MiKTeX 2.9\tex\latex\base\fontmath.ltx (From File: fontdef.dtx)
 - 2016/12/03 v3.0a LaTeX Kernel (Math font setup)



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